LITTLE WHITE OAK

Knox County

2006 Fish Management Report

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EXECUTIVE SUMMARY

- Little White Oak is a 7-acre impoundment with ample shoreline fishing. There is a paved boat ramp and a small parking area. The maximum depth is 18 ft and the average depth is approximately 8 ft.

- The bluegill sample consisted of 66 fish ranging from 1.5 to 9.0 in TL. The electrofishing catch rate was 117 bluegill/h. Twenty-two percent of the bluegill were greater than 8 in TL. The largemouth bass sample consisted of 30 fish ranging from 5.7 to 12.4 in TL. The electrofishing catch rate was 60 bass/h. Eleven redear sunfish were collected ranging from 6.5 to 10.5 in TL.

- There is a good bluegill and redear fishery with sufficient pressure from largemouth bass and anglers to maintain good growth. High angling pressure is cropping off the legal bass. Anglers are utilizing the annual channel catfish stockings, only one was collected in this survey.

- The Department of Natural Resources should increase the annual channel catfish stockings from 50 to 100 per acre, due to the lake's proximity to Vincennes and apparent high use.

FIGURES

Figure Page

INTRODUCTION

Little White Oak is a 7-acre impoundment located on the White Oak State Fishing Area northeast of Vincennes near Bruceville. It has been owned and managed by the Division of Fish and Wildlife since 1966. In addition to largemouth bass, bluegill, and redear opportunities, channel catfish are stocked annually at a rate of 50 catfish/acre. The maximum depth is 18 ft and the average depth is approximately 8 ft. There is a paved boat ramp with ample shoreline fishing opportunities.

The last general survey conducted at Little White Oak was in 1995. The objective of this survey was to evaluate the overall status of the fishery. This report presents results of a survey of Little White Oak Lake in 2006 and management recommendations.

METHODS

A standard fish survey was conducted at Little White Oak Lake, June 19 to 20, 2006, according to the Manual of Fisheries Survey Methods (Shipman et al. 2001). Sampling effort consisted of one lap around the lake or 0.48 h of pulsed DC night electrofishing, two overnight trap net sets and one overnight gill net set (Figure 1). Fish were measured to the nearest 0.1 in TL. Scales samples were taken from game species for age and growth analysis. District averages were used to estimate fish weight. Proportional stock density (PSD) was calculated for largemouth bass and bluegill (Anderson and Neumann 1996). Water chemistry parameters were also measured.

Tier II aquatic vegetation sampling was conducted on July 17, 2006. A GPS unit was used to record the location of the limnological data and fish collection sites.

RESULTS

Water quality data was collected in June during the general survey. The conductivity was 160 μS. The Secchi disk reading was 3 ft 3 in. Dissolved oxygen (DO) was 10.5 ppm at the surface, and 1.2 ppm at the bottom. The DO was adequate for fish survival to a depth of 4 ft. The pH was 8.4 at the surface and 6.0 at the bottom. Alkalinity was 51.3 ppm at the surface and 85.5 at the bottom.

Five submersed and three floating species of vegetation were collected. Coontail had a Dominance Index (DI) of 24.8, occurring at 66.7% of the sample sites (N = 21). A naiad sp. had

a DI of 17.1 and was collected at 47.6% of the sites. Brittle naiad and small pondweed were collected at 19.0% and 14.3% of the sites, respectively. Chara, common duckweed, giant duckweed, and watermeal were also collected. Creeping water primrose occurred along the dam and blue-green algae was also observed.

A total of 120 fish representing nine species was collected with an estimated weight of 77.9 lbs. Bluegill dominated the catch by number (55%) followed by largemouth bass (25%). Redear represented 9% of the sample. Warmouth, mosquitofish, channel catfish, flathead catfish, white crappie, and yellow bullhead were also collected.

The bluegill sample consisted of 66 fish ranging from 1.5 to 9.0 in TL. Bluegill represented 16% of the total weight of fish collected. The electrofishing catch rate was 117 bluegill/h. Twenty-two percent of the bluegill were greater than 8 in TL.

The largemouth bass sample consisted of 30 fish ranging from 5.7 to 12.4 in TL. Bass represented 70% of the total weight of fish collected. The electrofishing catch rate was 60 bass/h.

Eleven redear sunfish were collected that ranged from 6.5 to 10.5 in TL. The electrofishing catch rate was 23 redear/h.

DISCUSSION

Little White Oak's fishery has not changed much since the last survey (Schoenung 1996). Pressure from largemouth bass and angler harvest has been sufficient to maintain good bluegill and redear size structure. The absence of legal size bass is an indication of high angling pressure. Anglers are utilizing the annual channel catfish stockings; only one was collected in this survey. Reduced access and fishing opportunities at Big White Oak has increased fishing pressure on Little White Oak. Big White Oak is a 21-acre impoundment adjacent to Little White Oak. Fish management activities have been suspended at Big White Oak following the decision to decommission the failing dam (Earth Tech 2003). The Department of Natural Resources should increase the annual channel catfish stockings at Little White Oak Lake from 50 to 100 per acre, due to the lake's proximity to Vincennes and apparent high use.

There is ample shoreline access along the dam, near the ramp, and foot paths along the wooded areas. Little White Oak has a good native population of submersed vegetation. Common duckweed and creeping water primrose were also documented. These species can reach nuisance

levels. Common duckweed has a tendency to film over the lake, making the lake unsightly. However, changes in weather patterns or a stiff breeze will often open up areas of duckweed in a matter of hours. Creeping water primrose is an emergent species which grows from the shoreline along the surface. This species can be important in quelling wave action and thereby slowing shoreline erosion. Creeping water primrose can also provide good nursery habitat for fish. Spot treatments may be warranted if this plant impedes angler access.

RECOMMENDATIONS

- The Department of Natural Resources should increase the annual channel catfish stockings from 50 to 100 per acre.

LITERATURE CITED

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Submitted by: Debbie King, Assistant Fisheries Biologist
Date: June 25, 2007

Approved by: Dave Kittaka, Fisheries Biologist

Approved by: Brian M. Schoenung, Fisheries Supervisor

Date: August 29, 2007

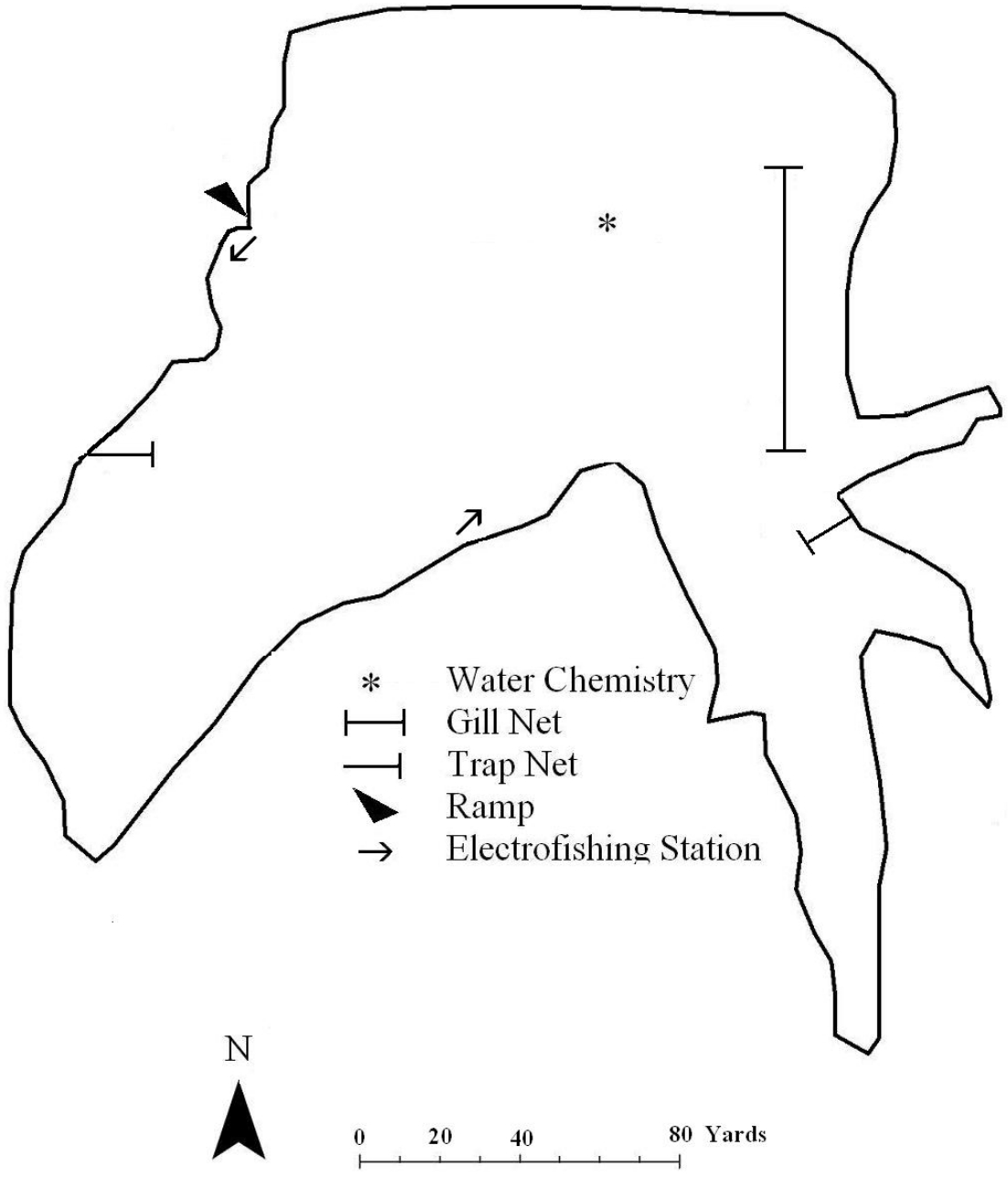

Figure 1. Little White Oak, White Oak State Fishing Area, Knox County. Locations of water chemistry, gill net, trap nets, and electrofishing stations, 2006.

LAKE SURVEY REPORT

Type of Survey: [ ] Initial Survey [X] Re-Survey

Lake Name	County	Date of survey (Month, day, year)
Little White Oak	Knox	6/19/2006
Biologist's name		Date of approval (Month, day, year)
Dave Kittaka, Debra King, Jennifer Pritchett, Matt Bartley		8/28/2007

LOCATION

Quadrangle Name	Range	Section
Fritchton	9W	18
Township Name	Nearest Town	
4N	Bruceville	

ACCESSIBILITY

State owned public access site	Privately owned public access site	Other access site
Paved boat ramp		

Surface acres	Maximum depth	Average depth	Acre feet	Water level	Extreme fluctuations
7	18 feet	8	70	475 MLS	None

Location of benchmark

INLETS

Name	Location	Origin
Surface runoff		

OUTLETS

Name	Location
Tributary of Small's Creek	

Water level control: Concrete drop box and drain valve

POOL	ELEVATION (Feet MSL)	ACRES
TOP OF DAM		
TOP OF FLOOD CONTROL POOL		
TOP OF CONSERVATION POOL		
TOP OF MINIMUM POOL		
STREAMBED		

Bottom type

	Boulder
	Gravel
	Sand
X	Muck
X	Clay
	Marl

Watershed use

Development of shoreline: Boat ramp and parking area

Previous surveys and investigations: Fisheries surveys in 1967, 1968, 1973, 1977, 1981, and 1995. Winterkill spot-check in April 1977.

SAMPLING EFFORT AT LITTLE WHITE OAK 2006					
ELECTROFISHING	Day hours N/A		Night hours 0.48		Total hours 0.48
TRAP NETS	Number of traps 2		Number of Lifts 1		Total effort 2
GILL NETS	Number of nets 1		Number of Lifts 1		Total effort 1
ROTENONE	Gallons	ppm	Acre Feet Treated	SHORELINE SEINING	Number of 100 Foot Seine Hauls

PHYSICAL AND CHEMICAL CHARACTERISTICS					
Color Tannin brown			Turbidity 3 Feet	3	Inches (SECCHI DISK)
Alkalinity (ppm)* Surface: 51.3	Bottom: 85.5		pH Surface: 8.4		Bottom: 6.0
Conductivity: 160 µS			Air temperature: 88 °F		
Water chemistry GPS coordinates: N 38.74239			W -87.406414		

TEMPERATURE AND DISSOLVED OXYGEN (D.O.)								
DEPTH (FEET)	Degrees (°F)	D.O. (ppm)	DEPTH (FEET)	DEGREES (°F)	D.O. (ppm)	DEPTH (FEET)	DEGREES (°F)	D.O. (ppm)
SURFACE	79.0	10.51	36			72		
2	78.3	9.26	38			74		
4	77.5	7.97	40			76		
6	73.2	2.60	42			78		
8	64.8	1.65	44			80		
10	58.6	1.48	46			82		
12	52.9	1.33	48			84		
14	49.1	1.28	50			86		
16	47.8	1.21	52			88		
18btm	47.1	1.20	54			90		
20			56			92		
22			58			94		
24			60			96		
26			62			98		
28			64			100		
30			66					
32			68					
34			70					

COMMENTS
Electrofishing settings: 350 Volts, 2.8 Amps
Shocked entire shoreline.

*ppm-parts per million

SPECIES AND RELATIVE ABUNDANCE OF FISHES COLLECTED BY NUMBER AND WEIGHT, LITTLE WHITE OAK, 2006					
*COMMON NAME OF FISH	NUMBER	PERCENT	LENGTH RANGE (inches)	WEIGHT (pounds)	PERCENT
Bluegill	66	55.0	1.5 - 9.0	12.59	16.2
Largemouth bass	30	25.0	5.7 - 12.4	54.85	70.4
Redear sunfish	11	9.2	6.5 - 10.5	4.91	6.3
Warmouth	7	5.8	2.2 - 7.3	1.37	1.8
Mosquitofish	2	1.7	0.6	**	0.0
Channel catfish	1	0.8	10.1	0.28	0.4
Flathead catfish	1	0.8	20.0	3.48	4.5
White crappie	1	0.8	6.6	0.11	0.1
Yellow bullhead	1	0.8	9.6	0.34	0.4
TOTAL	120			77.93	

*Common names of fishes recognized by the American Fisheries Society.

** Less than 0.01 pound.

					TN	GN	EF
Lake:	Little White Oak			Total #	9	1	56
Date:	6/19/2006	to	6/20/2006	Effort	2	1	0.48
Species:	Bluegill			CPUE	5	1	117
Total number:	66						
Total weight:	12.59						
Length range:	1.5	to	9.0				

Group	TL (in)	TN	GN	EF	TOTAL	RSD
Stock	3	9	1	50	60	-
Quality	6	7	1	26	34	52
Preferred	8	1	0	11	12	22
Memorable	10	0	0	0	0	
Trophy	12	0	0	0	0	

Length group (in)	#	Mean weight (lbs)	Length group (in)	#	Mean weight (lbs)	Length group (in)	#	Mean weight (lbs)
1.0			17.5			34.0		
1.5	1	0.00	18.0			34.5		
2.0	1	0.00	18.5			35.0		
2.5	4	0.02	19.0			35.5		
3.0	3	0.02	19.5			36.0		
3.5	3	0.04	20.0			36.5		
4.0	6	0.05	20.5			37.0		
4.5	5	0.06	21.0			37.5		
5.0	5	0.10	21.5			38.0		
5.5	4	0.13	22.0			38.5		
6.0	4	0.15	22.5			39.0		
6.5	4	0.22	23.0			39.5		
7.0	8	0.27	23.5			40.0		
7.5	6	0.30	24.0			40.5		
8.0	5	0.39	24.5			41.0		
8.5	6	0.47	25.0			41.5		
9.0	1	0.54	25.5			42.0		
9.5			26.0			42.5		
10.0			26.5			43.0		
10.5			27.0			43.5		
11.0			27.5			44.0		
11.5			28.0			44.5		
12.0			28.5			45.0		
12.5			29.0			45.5		
13.0			29.5			46.0		
13.5			30.0			46.5		
14.0			30.5			47.0		
14.5			31.0			47.5		
15.0			31.5			48.0		
15.5			32.0			48.5		
16.0			32.5			49.0		
16.5			33.0			49.5		
17.0			33.5			50.0		

Lake: Little White Oak
Date: 6/19/2006 to 6/20/2006
Species: Bluegill

Length group (in)	Total number	Sub-sample	Age 1	2	3	4	5	6	7	8	9	10	11
1.0													
1.5	1	1	1										
2.0	1	1	1										
2.5	4	4	4										
3.0	3	3	3										
3.5	3	3		3									
4.0	6	6		6									
4.5	5	5		8									
5.0	5	5		8									
5.5	4	4		4									
6.0	4	4		4									
6.5	4	4		3	1								
7.0	8	8		1	6	1							
7.5	6	6			3	2	1						
8.0	5	5			1	4							
8.5	6	6				3	2	1					
9.0	1	1					1						
9.5													
Total	66	66	9	37	11	10	4	1					

Age	Number	Mean TL	Var	SE	Lo 95%CI	Up 95%CI
1						
2	37	5.2	0.84	0.15	4.9	5.5
3	11	7.4	0.16	0.12	7.2	7.7
4	10	8.2	0.25	0.16	7.9	8.5
5	4	8.6	0.40	0.31	8.0	9.3
6	1	8.8				
7						

					TN	GN	EF
Lake:	Little White Oak			Total #	0	1	29
Date:	6/19/2006	to	6/20/2006	Effort	2	1	0.48
Species:	Largemouth bass			CPUE	0	1	60
Total number:	30						
Total weight:	13.2						
Length range:	5.7	to	12.4				

Group	TL (in)	TN	GN	EF	TOTAL	RSD
Stock	8	0	0	26	26	-
Quality	12	0	0	1	1	4
Preferred	15	0	0	0	0	
Memorable	20	0	0	0	0	
Trophy	25	0	0	0	0	

Length group (in)	#	Mean weight (lbs)	Length group (in)	#	Mean weight (lbs)	Length group (in)	#	Mean weight (lbs)
1.0			17.5			34.0		
1.5			18.0			34.5		
2.0			18.5			35.0		
2.5			19.0			35.5		
3.0			19.5			36.0		
3.5			20.0			36.5		
4.0			20.5			37.0		
4.5			21.0			37.5		
5.0			21.5			38.0		
5.5	1	0.07	22.0			38.5		
6.0	2	0.11	22.5			39.0		
6.5			23.0			39.5		
7.0	1	0.15	23.5			40.0		
7.5			24.0			40.5		
8.0			24.5			41.0		
8.5	2	0.26	25.0			41.5		
9.0	4	0.34	25.5			42.0		
9.5	4	0.39	26.0			42.5		
10.0	2	0.47	26.5			43.0		
10.5	7	0.54	27.0			43.5		
11.0	5	0.62	27.5			44.0		
11.5	1	0.67	28.0			44.5		
12.0	1	0.88	28.5			45.0		
12.5			29.0			45.5		
13.0			29.5			46.0		
13.5			30.0			46.5		
14.0			30.5			47.0		
14.5			31.0			47.5		
15.0			31.5			48.0		
15.5			32.0			48.5		
16.0			32.5			49.0		
16.5			33.0			49.5		
17.0			33.5			50.0		

Lake: Little White Oak
Date: 6/19/2006 to 6/20/2006
Species: Largemouth bass

Length group (in)	Total number	Sub-sample	Age									
			1	2	3	4	5	6	7	8	9	10
1.0												
1.5												
2.0												
2.5												
3.0												
3.5												
4.0												
4.5												
5.0												
5.5	1	1	1									
6.0	2	2	2									
6.5												
7.0	1	1	1									
7.5												
8.0												
8.5	2	2		2								
9.0	4	4		3	1							
9.5	4	4		3	1							
10.0	2	2			2							
10.5	7	7			7							
11.0	5	5			4	1						
11.5	1	1				1						
12.0	1	1				4						
12.5												
Total	30	30	4	8	15	6						

Age	Number	Mean TL	Var	SE	Lo 95%CI	Up 95%CI
1	4	6.4	0.40	0.31	5.7	7.0
2	8	9.3	0.17	0.15	9.0	9.6
3	15	10.7	0.33	0.15	10.4	10.9
4	6	12.0	0.18	0.17	11.7	12.3
5						

Occurrence and Abundance of Submersed Aquatic Plants - Overall

Lake:	Little White Oak	**Secchi (ft):**	1.8	**SE Mean Species / Site:**	0.33
Date:	7/17/2006	**Littoral Sites w/Plants:**	14	**Mean Natives / Site:**	1.67
Littoral Depth (ft):	5.0	**Number of Species:**	8	**SE Mean Natives / Site:**	0.33
Littoral Sites:	21	**Max. Species / Site:**	5	**Species Diversity:**	0.73
Total Sites:	21	**Mean Species / Site:**	1.67	**Native Diversity:**	0.73

	Frequency of	Score Frequency				
Species	**Occurrence**	**0**	**1**	**3**	**5**	**Dominance**
Coontail	66.7	33.3	47.6	9.5	9.5	24.8
Naiad sp.	47.6	52.4	38.1	0.0	9.5	17.1
Brittle naiad	19.0	81.0	14.3	0.0	4.8	7.6
Small pondweed	14.3	85.7	14.3	0.0	0.0	2.9
Chara	4.8	95.2	4.8	0.0	0.0	1.0
Common duckweed	4.8	95.2	4.8	0.0	0.0	1.0
Giant duckweed	4.8	95.2	4.8	0.0	0.0	1.0
Watermeal	4.8	95.2	4.8	0.0	0.0	1.0
Filamentous Algae	9.5					

Other species noted:
Creeping water primrose
Blue-green algae

GPS LOCATIONS OF SAMPLING EQUIPMENT AT LITTLE WHITE OAK 2006															
GILL NETS					TRAP NETS					ELECTROFISHING				
1	N	38.74248	W	-87.40594	1	N	38.74174	W	-87.406749	1	N	38.7424	W	-87.4073
	N	38.74178	W	-87.40594	2	N	38.74189	W	-87.407651		N	38.7424	W	-87.4073
2	N		W		3	N		W		2	N		W	
	N		W		4	N		W			N		W	
3	N		W		5	N		W		3	N		W	
	N		W		6	N		W			N		W	
4	N		W		7	N		W		4	N		W	
	N		W		8	N		W			N		W	
5	N		W		9	N		W		5	N		W	
	N		W		10	N		W			N		W	
6	N		W		11	N		W		6	N		W	
	N		W		12	N		W			N		W	
7	N		W		13	N		W		7	N		W	
	N		W		14	N		W			N		W	
8	N		W		15	N		W		8	N		W	
	N		W		16	N		W			N		W	
9	N		W		17	N		W		9	N		W	
	N		W		18	N		W			N		W	
10	N		W		19	N		W		10	N		W	
	N		W		20	N		W			N		W	
11	N		W							11	N		W	
	N		W								N		W	
12	N		W							12	N		W	
	N		W								N		W	
13	N		W							13	N		W	
	N		W								N		W	
14	N		W							14	N		W	
	N		W								N		W	
15	N		W							15	N		W	
	N		W								N		W	
16	N		W							16	N		W	
	N		W								N		W	
17	N		W							17	N		W	
	N		W								N		W	
18	N		W							18	N		W	
	N		W								N		W	
19	N		W							19	N		W	
	N		W								N		W	
20	N		W							20	N		W	
	N		W								N		W	